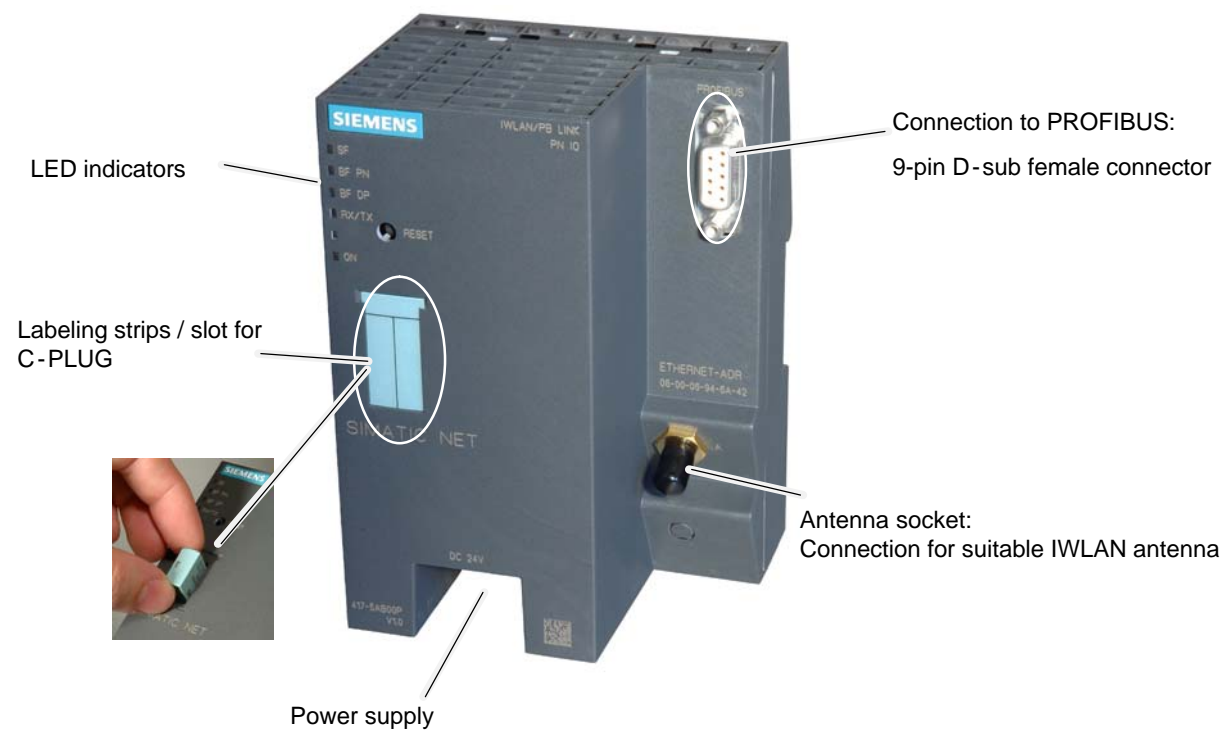# SIEMENS

SIMATIC NET

S7-CPs for Industrial Ethernet

Manual Part B

Gateway IWLAN/PB Link PN IO

6GK1417‑5AB00 / 6GK1417‑5AB01   As of version 1 (firmware version V 1.1)

LED indicators

Labeling strips / slot for
C‑PLUG

Power supply

Connection to PROFIBUS:

9-pin D‑sub female connector

Antenna socket:
Connection for suitable IWLAN antenna

Notes on the product

Product names:

This description contains information on the product

- IWLAN/PB Link PN IO   Order no.: 6GK1417‑5AB00
                                                 Order no.: 6GK1417‑5AB01 (US variant)

Product information accompanying the product

> **Notice**
>
> All the notes provided in the **compact operating instructions** supplied with the device described here are valid and must be observed.

General information about the documentation

All the documents mentioned here can be found on the SIMATIC NET Industrial Wireless LAN CD supplied with the IWLAN/PB Link PN IO or are available via Internet.

Documentation about the IWLAN/PB Link PN IO

- "S7 CPs for Industrial Ethernet Configuration and Commissioning" manual with the following components:

  - General Part A

    Contains basic information about operating, configuring, and diagnosing CPs and gateways for SIMATIC S7.

  - **Device‑specific Part BL2 "IWLAN/PB Link PN IO Gateway"** (this documentation)

    Contains information about installation, commissioning, and configuration.

- Operating Instructions (compact) ‑ hard copy

  Contains safety instructions, certifications, and warnings.

Additional documentation about operating the IWLAN/PB Link PN IO

- Ooperating Instructions
  SCALANCE W788‑xPRO/RR /
  SCALANCE W74x‑1PRO/RR

- RCoax system manual

Contents

Contents - Part A

Note

Please remember that Part A of the manual also belongs to the description of the CP / Link. This contains ‑ among other things ‑ an explanation of the safety instrucions provided, references, and further information about all S7‑CPs / IWLAN/IE/PB Link for Industrial Ethernet.

The following revision level of Part A belongs to Part B of the manual: as of 1/2005

You can download the current general Part A from the Internet:

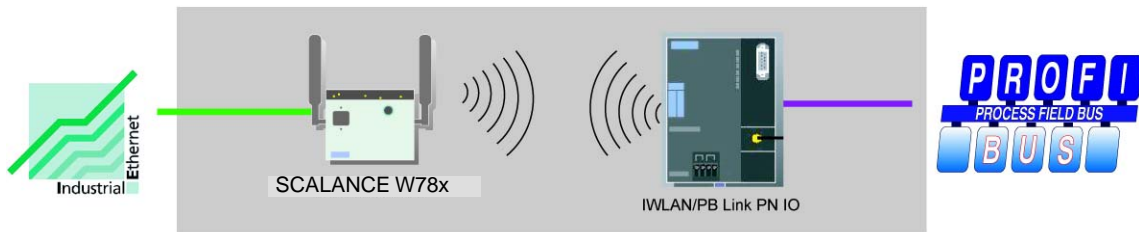http://support.automation.siemens.com/WW/news/en/8777865

Contents - Part BL2

Contents

1   Properties and Services

Application

The IWLAN/PB Link PN IO is a gateway that connects the Industrial Wireless LAN (control level) and PROFIBUS (cell/field level) networks to each other.

The IWLAN/PB Link PN IO supports access to all PROFIBUS DP slaves on the subordinate PROFIBUS; DP slaves complying with PROFIBUS DP-V0 are supported and, as of firmware version V1.1.0, also DP slaves complying with the DP-V1 standard and Siemens DP slaves.

The Industrial Wireless LAN (IWLAN) with RCoax and WLAN antenna for wireless or non-contact data transmission is ideal for a variety of mobile applications, including monorail conveyors and high-bay storage and retrieval systems.

The IWLAN/PB Link PN IO can be operated in the following modes:

• Gateway as PROFINET IO proxy

• Gateway in standard operation

Gateway as PROFINET IO proxy

The IWLAN/PB Link PN IO is a key component of PROFINET IO. It is responsible for the connection between the PROFINET IO controllers on Industrial Ethernet and the PROFINET IO devices (DP slaves on PROFIBUS).

From the point of view of the PROFINET IO controller on Industrial Ethernet, the process of accessing PROFINET IO devices that are connected to Industrial Ethernet via the Industrial Wireless LAN and IWLAN/PB Link PN IO and accessing PROFIBUS DP slaves that are connected to PROFIBUS DP is identical.

The IWLAN/PB Link PN IO acts as a proxy for the DP slaves connected to PROFIBUS DP.
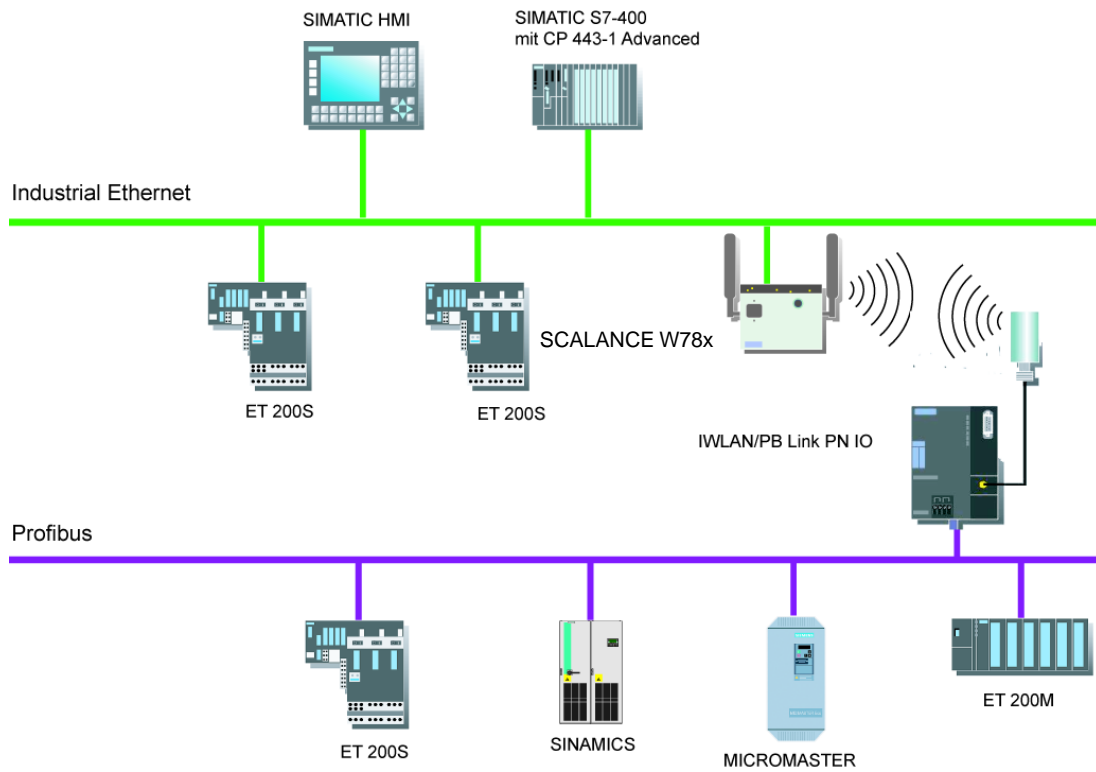
Figure 1-1   Example of Using the IWLAN/PB Link PN IO PROFINET IO Proxy

Gateway in standard operation

The following services are available in standard operation:

- PG/OP communication

  PG/OP communication is used to download programs and configuration data, run test and diagnostic functions, as well as operate and monitor the plant (HMI systems).

- Assigning parameters to field devices (data record routing)

  You can use the IWLAN/PB Link PN IO as a router for data records that are addressed to field devices (DP slaves). In this way, devices that are not directly connected to PROFIBUS and, therefore, cannot access the field devices (DP slaves) directly, can transmit data records to the field devices via the IWLAN/PB Link PN IO.

  The SIMATIC PDM (Process Device Manager) is an example of a tool that creates data records for assigning parameters to field devices.

- Gateway to a DP master system with constant bus cycle time

  The IWLAN/PB Link PN IO acts as a gateway between the Industrial Wireless LAN and the field devices on a DP master system. The IWLAN/PB Link PN IO is used here as an active node along with a DP master on a PROFIBUS that has been set to constant bus cycle time.

- Cross-subnet S7 connections for HMI operation

  The IWLAN/PB Link PN IO forwards communication via S7 connections. This service is used for HMI applications (PC stations), for example.
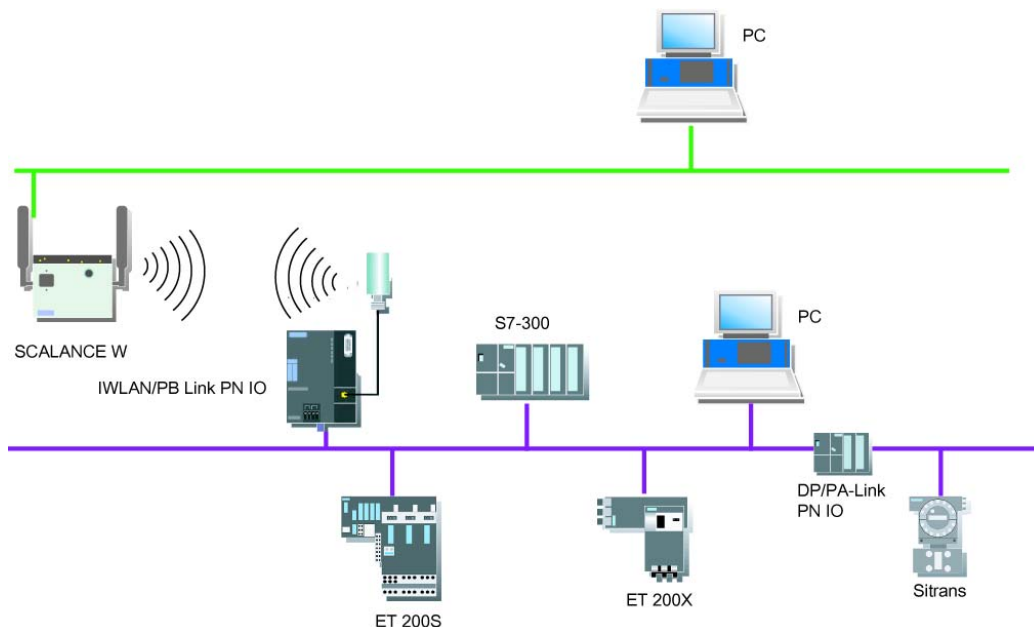
Figure 1-2   Example of Using the IWLAN/PB Link PN IO in Standard Mode

Gateway in mobile applications

The IWLAN/PB Link PN IO enables wireless communication with programmable controllers in mobile applications, such as automated guided vehicle systems, high-bay storage and retrieval systems, and monorail conveyors. Solutions involving power rail boosters for PROFIBUS via slip contacts can, therefore, be replaced with a non-contact, non-wearing data transmission technology.

It can be connected via a WLAN antenna or an antenna for use with an RCoax cable (leak-mode conductor).
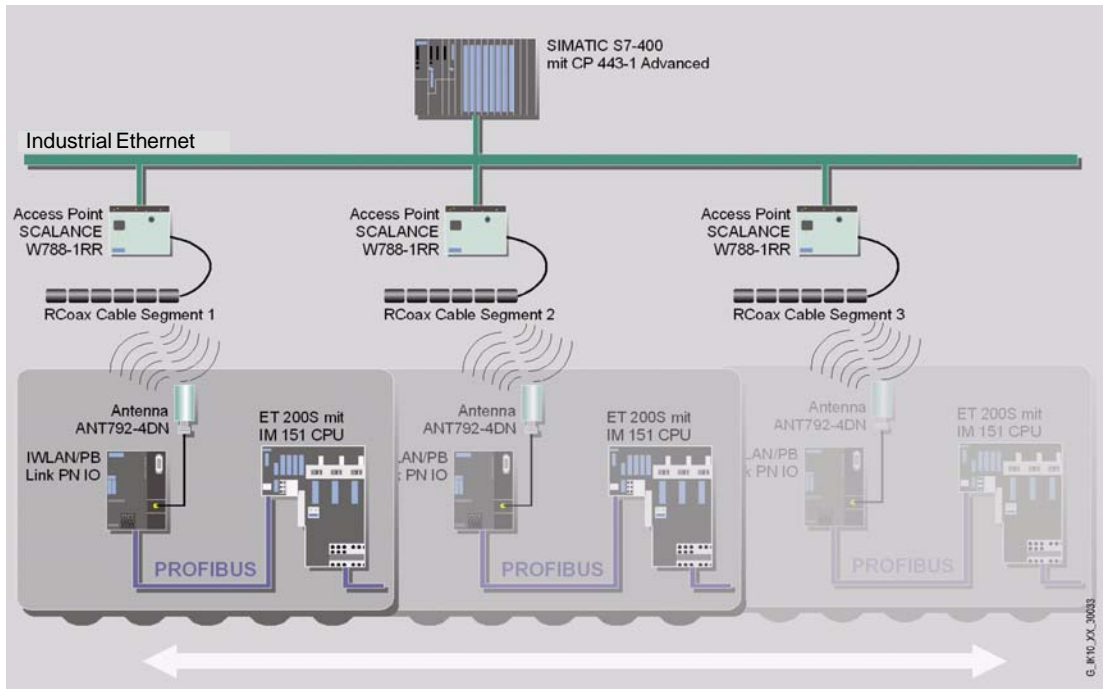
Gateway in PROFINET IO applications with iPCF (industrial Point Coordination Function)

The IWLAN/PB Link PN IO supports iPCF mode.

The use of iPCF is recommended particularly when a high throughput is required with large numbers of nodes or when very short handover times are necessary.

The iPCF mechanism was further optimized for operation with PROFINET IO data traffic by handling PROFINET IO data traffic with high priority.

Notice

For PROFINET IO communication, we recommend enabling the iPCF mode.

Stable PNIO communication is only possible when it is guaranteed that a WLAN client is in a cell with more than 60% signal strength at all times. This can be checked by activating and deactivating the various segments.

This does not mean that the client needs to change when there is a signal strength less than 60%. It is only necessary to make sure that a segment with adequate signal strength would be available.

Note

You will find a detailed description of the commands of the Command Line Interface (CLI) in the Operating Instructions SCALANCE W788-xPRO/RR / SCALANCE W74x-1PRO/RR. This manual (file name: BA_SCALANCE-W788-xPRO-RR-W74x-1PRO-RR_0.pdf) is available on the CD that accompanies the IWLAN/PB Link PN IO or on the Internet at:

http://support.automation.siemens.com/WW/view/en/28529396

Other properties and services

- Industrial wireless LAN

  IWLAN/PB Link PN IO provides a wireless interface (in compliance with IEEE 802.11b/g/a/h.

- Forwarding time messages (configurable option)

  The IWLAN/PB Link PN IO can forward time messages received by a real-time transmitter as follows:

  - from Ethernet to PROFIBUS

  - From PROFIBUS to Ethernet

  If there is a time master on Industrial Ethernet, the IWLAN/PB Link PN IO then receives time messages for time stamping diagnostic buffer entries and process signals.

- Option: C-PLUG as exchangeable medium for the project engineering data

  The IWLAN/PB Link PN IO allows the configuration data to be saved to a removable memory medium (C-PLUG). In this way, a defective module can simply be replaced by plugging the C-PLUG into the new module.

- Option: PRESET-PLUG

  The PRESET PLUG is a simple device for assigning a defined default setting to an IWLAN/PB Link PN IO and SCALANCE W devices.

- WLAN Security Properties

  - Supported authentication standards:

    WPA, WPA-PSK, IEEE 802.1x, WPA2, WPA2-PSK

    Note: WPA2 (Wi-Fi Protected Access 2) includes the further development of WPA that implements the functions of the security standard IEEE 802.11i.

  - Supported encryption methods:

    WEP, AES, TKIP

- Downloading firmware

  IWLAN/PB Link PN IO supports updating of the firmware (FW) using the firmware loader supplied with STEP 7 / NCM S7.

  A firmware update can be downloaded at any time from the PC/PG via the Ethernet port.

Configuration

You can configure the IWLAN/PB Link PN IO for all operating modes via Industrial Ethernet (recommended). If you use the device as a standard gateway, the configuration data can also be changed/supplied via PROFIBUS.

2   Structure

LED indicators

RESET button

Labeling strips / slot
for C‑PLUG

Power supply

Connection to PROFIBUS:

9-pin D‑sub female connector

Antenna socket:
Connection for suitable
IWLAN antenna
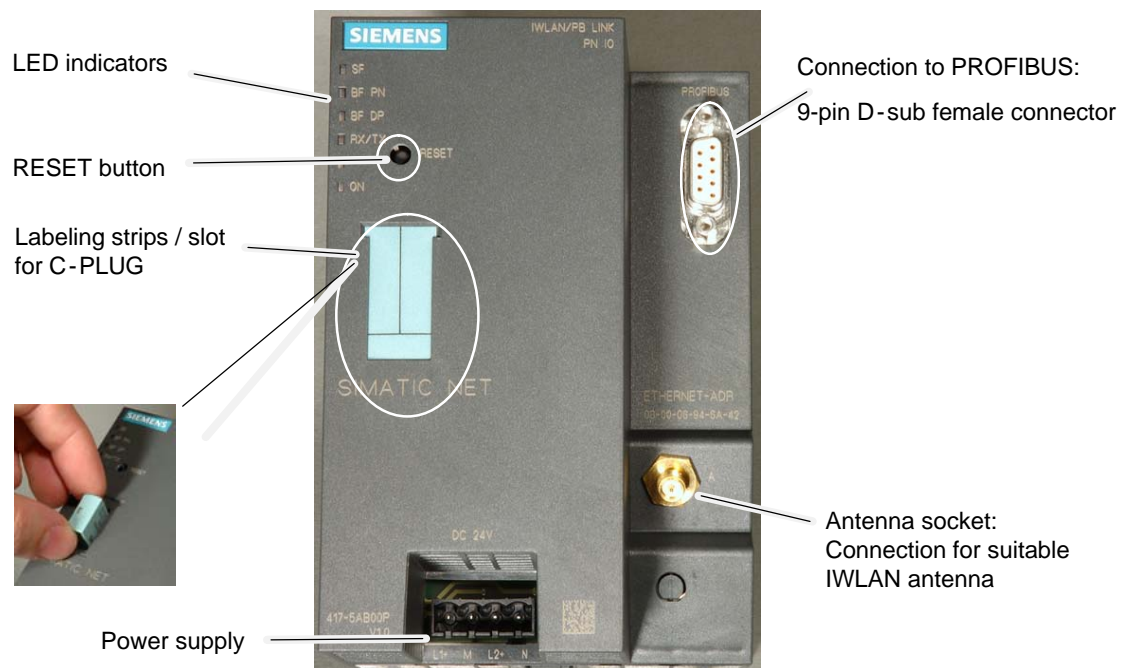
Figure 2-1

The outer dimensions of the IWLAN/PB Link PN IO match the housing format of the power rail booster. It is snapped onto a 35 mm DIN rail.

An antenna suitable for RCoax applications or an antenna for an IWLAN radio hop is connected by means of a connecting plug. With degree of protection IP20, the IWLAN/PB Link PN IO is suitable for installation in a cabinet.

The connections and display elements are all located on the front panel. The optional C‑PLUG is located under a cover, which is also on the front panel.

Other design features:

* No fan necessary

* R‑SMA interface for connecting antennas;

* 9-pin D‑sub female connector for connecting the IWLAN/PB Link PNIO to PROFIBUS

* 4‑pin terminal block for connecting a redundant external 24 V DC power supply;

* LED indicators

3   Installation and Commissioning

Use the overview below to find out which section is relevant to your application.

PRESET PLUG is available
(recommended procedure)

PRESET PLUG is **not** available

Installation and Parameter
Assignment with PRESET PLUG
-> see Section 3.1

Installation and Parameter
Assignment without PRESET PLUG
-> see Section 3.4

The device has been commissioned on the WLAN side and can be
supplied with configuration data.

Subsequent procedure depending on application

Configuration with STEP 7 for use
as a PROFINET IO device and
gateway
-> See Section 4.1

Configuration with STEP 7 for use
as gateway only
-> See Section 4.2

The device is ready

3.1 Installation and Parameter Assignment with the PRESET PLUG

The following section describes the recommended commissioning procedure with the PRESET PLUG up to the parameter assignment stage. If a PRESET PLUG is not used in your application, proceed as described in Section 3.4.

The project engineering that is subsequently required is described in Chapter 4

Please read the additional notes in this section. At this stage, installation and configuration are carried out separately.

Follow the steps below:

Step	Installation and Parameter Assignment with PRESET PLUG
1.	Install the IWLAN/PB Link PN IO on a mounting rail.
2.	Insert the PRESET PLUG into the C-PLUG slot. The preset function of the PRESET PLUG only functions if the PRESET PLUG was configured beforehand for the IWLAN/PB Link PN IO. If the PRESET PLUG has not yet been configured, proceed as described in Section 3.2.
3.	Connect the power supply to the IWLAN/PB Link PN IO (read the notes in Section 3.3).
4.	Switch the power supply on. When the LEDs flash slowly, this indicates that the PRESET PLUG has been recognized. The LEDs for the PRESET PLUG function are explained in the device LED description; see Chapter 6
5.	Press the reset button next to the C-PLUG slot. The default settings for the PRESET PLUG are now copied to the device where they are stored. When the settings have been successfully copied, the LEDs stop flashing and switch to a steady-light signal after a few seconds.
6.	Now switch off the power supply and remove the PRESET PLUG.
7.	Connect the IWLAN/PB Link PN IO to PROFIBUS and, via the antenna, to IWLAN.
8.	Switch the power supply on. The device now runs with the parameters transferred by the PRESET PLUG and can be supplied with configuration data.
The device is now commissioned on the WLAN side and can be supplied with configuration data.	
9.	Now continue with the configuration process depending on your application: • Configuration with STEP 7 for use as a PROFINET IO device and gateway -> see Section 4.2 • Configuration with STEP 7 for use as a gateway only -> see Section 4.1

General notes

- IP parameters and device‑specific parameters are not changed

  Using the PRESET PLUG prevents duplicate IP addresses by ensuring that the IP parameters are retained unchanged.

  Other device‑specific parameters also remain unchanged, including:

  - System Contact

  - System Name

  - System Location

- The WLAN interface is deactivated.

  The WLAN device interface is deactivated when the PRESET PLUG is inserted. The device cannot be operated with the WLAN when the PRESET PLUG is inserted.

3.2   Configuring the PRESET PLUG

Overview

The PRESET PLUG is a simple device for assigning a defined default setting to an IWLAN/PB Link PN IO and SCALANCE W devices.

The PRESET PLUG is first configured in a SCALANCE W788 with the required WLAN parameters and then inserted in the C‑PLUG slot on the target system for commissioning purposes.

When several WLAN clients with the same parameters are used, the advantage of this procedure is that you do not have to assign parameters to each individual client manually.

If a PRESET PLUG is not used in your application, proceed as described in Section 3.4.

Notice

The PRESET PLUG 6GK5798‑8AB00 is only used for commissioning purposes. The device cannot be operated with the WLAN when the PRESET PLUG is inserted.

Configuring the PRESET PLUG

To configure a PRESET PLUG, you require a device of the type SCALANCE W7xx with a firmware version V3.0 or higher.

You can use this procedure to configure a PRESET PLUG from scratch or to change an existing configuration.

Follow the steps below:

Step	Procedure
1.	Insert a new PRESET PLUG or one that has already been configured into the C‑PLUG slot on the SCALANCE W7xx, which must be switched off.
2.	Switch the device on.
3.	Open the Web interface for the SCALANCE W7xx. The Web interface displays the current settings for the PRESET PLUG (provided a configuration already exists).

Step	Procedure
4.	Set all the parameters as required for making the default settings for the target devices: • This involves specifying whether the target device is to function as an AP or client. For the IWLAN/PB Link PN IO, choose "Client". • To ensure that the IWLAN/PB Link PN IO can later establish a connection with the AP correctly, adapt the following parameter settings to suit your specific application: - System / Country Code - SSID - WLAN Mode - Security - iPCF Mode (if necessary) - Other settings may also be required for your application (e.g. background scan channels).
5.	When you have set all the parameters, open the **System ▸ C‑PLUG** menu and select the "Create PRESET PLUG" function.
6.	Choose the target device type for which this PRESET PLUG is designed (in this case: IWLAN/PB Link PN IO).
7.	To complete the configuration, select "Modify". The PRESET PLUG has now been configured.
8.	Switch the SCALANCE W7xx off and remove the PRESET PLUG.

Note

The PRESET PLUG you have just configured only functions with the device type you selected.

3.3 Establishing the Connections

3.3.1 Important Notes

Notice

Important notes on installation and operation:

*   The module must be installed so that its upper and lower ventilation slits are not covered, allowing adequate ventilation.

Note

The PROFIBUS can be connected while the power supply is on.

Notice

The requirements of EN61000-4-5, surge immunity test on power supply lines, are met only when using a Blitzductor VT AD 24V type no. 918 402 .

Manufacturer:
DEHN+SÖHNE GmbH+Co.KG Hans Dehn Str.1 Postfach 1640 D-92306 Neumarkt, Germany

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⚠ **Warning**

The IWLAN/PB Link PN IO product must be installed in an enclosure or switchgear cabinet.

Where ATEX 100a (EN 50021) applies, this enclosure must meet at least IP54 in compliance with EN 60529.

WARNING
THE DEVICE MAY ONLY BE CONNECTED TO THE POWER SUPPLY OR DISCONNECTED FROM IT WHEN THE RISK OF EXPLOSION CAN BE EXCLUDED WITH CERTAINTY.

Ground/chassis ground concept

The device is grounded over the mounting rail.

Module accessories

The accessories (including the power supply) required for connecting the IWLAN/PB Link PN IO to an Industrial Wireless LAN and PROFIBUS must be ordered separately.

The optional C‑PLUG can also be ordered separately.

For more detailed information and ordering data, refer to the Catalog IK PI.

3.3.2 PG/PC Connection

You can connect the PG when configuring the CP as follows:

- Via Industrial Ethernet and WLAN interface (recommended)
- Via PROFIBUS (for standard operation only)

Industrial Ethernet and WLAN interface (recommended)

Commissioning the device for the WLAN is described in detail in this chapter (3). When configuring on the PG, a distinction must be made between the following modes:

- PROFINET IO use case

  In this use case, the IWLAN/PB Link PN IO obtains its project engineering data from the controller. This means:

  - Controller and Link must be connected over the WLAN;

  - The Link must already have been assigned a device name with STEP 7 so that the project engineering data can be downloaded.

  Read the detailed description of project engineering in Section 4.1.

- Standalone Mode

  In this use case, the IWLAN/PB Link PN IO is configured and downloaded as an S7‑300 station. This can take place as soon as you have assigned an Ethernet address to the device with STEP 7. Read the detailed description of project engineering in Section 4.2.

PROFIBUS (for standard operation only)

The IWLAN/PB Link PN IO can be reached over the PROFIBUS interface. You must, however, first assign a PROFIBUS address in the project engineering.

3.3.3   Power Supply

⚠ **Warning**

The IWLAN/PB Link PN IO is designed for operation with safety extra-low voltage (SELV). This means that only safety extra-low voltages (SELV) complying with IEC950/EN60950/ VDE0805 may be connected to the power supply terminals.

The power supply unit to supply the IWLAN/PB Link PN IO must comply with NEC Class 2 (voltage range 20.4 - 28.8 V, current requirement 300 mA).

The device must only be supplied by a power supply unit that complies with the requirements of class 2 for power supply units of the "National Electrical Code, Table 11 (b)". If the power supply is installed redundantly (two separate power supplies), the total power of both power supplies together must meet these requirements.

Exceptions:

- Supply by a SELV power source (complying with IEC 60950) or PELV power source (complying with VDE 0100-410) without restricted power is also permitted as long as suitable fire prevention measures are taken by means of:
  - installation in cabinet or suitable enclosure
  - installation in suitably equipped, closed room

The power supply is connected over a 4-pin plug-in terminal block. The power supply can be connected redundantly. The two inputs are isolated. There is no load sharing. When the supply is redundant, the power source with the higher output voltage supplies the IWLAN/PB Link PN IO alone. The power supply is connected to the housing over a high resistance to allow ungrounded installation.
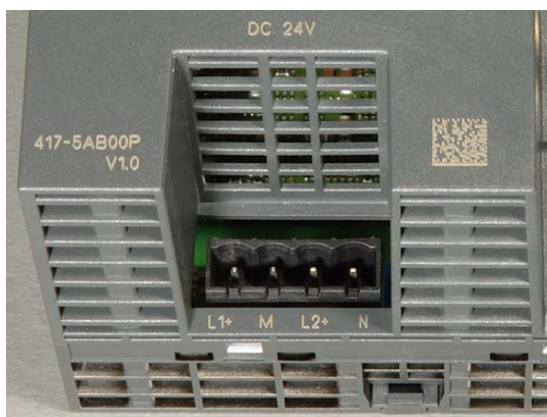
L1+:	+24 V DC
M:	24 V DC chassis
L2+:	+24 V DC
M:	24 V DC chassis

Figure 3-1   Power Supply

3.4 Installation and Parameter Assignment without the PRESET PLUG

Overview

The PRESET PLUG is a simple device for assigning a defined default setting to an IWLAN/PB Link PN IO and SCALANCE W devices.

If a PRESET PLUG is not used in your application, proceed as described below to assign parameters for the IWLAN/PB Link PN IO.

Before carrying out the procedure described below, make sure that the device has the default settings as shipped. If this is not the case, use the RESET button to restore the factory settings (see Section 5.2.3)

Configuration

For the procedure described here, you need the following device configuration with an AP with parameter settings for the configuration (configuration AP):
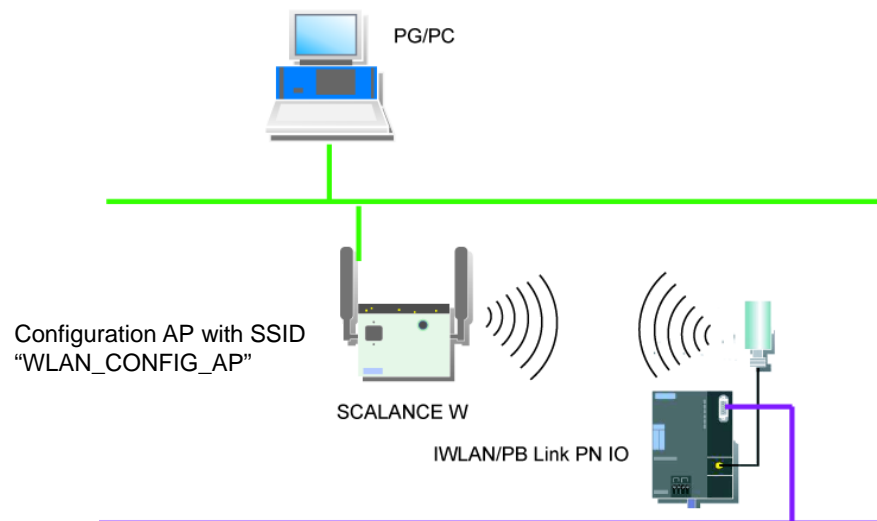
Follow the steps below:

Step	Procedure
1.	Install the IWLAN/PB Link PN IO on a mounting rail.
2.	Connect the device to IWLAN via the antenna.
3.	If necessary, adapt the AP settings to the default settings for the IWLAN/PB Link PN IO (see Section 5.1), so that it can be used as a configuration AP.

3 Installation and Commissioning

Step	Procedure
4.	Switch the power supply on. The device can now be accessed via its MAC address in the WLAN.
5.	Use the PST (Primary Setup Tool) to assign the IP address and PROFIBUS parameters to the IWLAN/PB Link PN IO. Note: The PST (Primary Setup Tool) is on the CD supplied with the product and can be found in the following directory:
6.	Log on to the IWLAN/PB Link PN IO via Telnet. To do so, open the MS‑DOS input prompt and enter the following command:telnet <IP address> Use the following default values to log in: • Login: admin • Password: admin
7.	Set the parameters for the IWLAN/PB Link PN IO over the Command Line Interface (CLI) so that the device can be commissioned in the operational environment in which the configuration is also loaded. If necessary, adapt the Country Code in the first step and then make any further settings you require. If you modify parameters, you will be prompted to restart. You should, however, only restart when you have made **all** relevant settings.
The device is now commissioned on the WLAN side and can be supplied with configuration data.	
8.	After completing the settings, commission the IWLAN/PB Link PN IO in its operative environment in the WLAN.
9.	Now continue with the configuration process depending on your application: • Configuration with STEP 7 for use as a PROFINET IO device and gateway ‑> see Section 4.2 • Configuration with STEP 7 for use as a gateway ‑> see Section 4.1

Note

You will find a detailed description of the commands of the Command Line Interface (CLI) in the Operating Instructions SCALANCE W788‑xPRO/RR / SCALANCE W74x‑1PRO/RR. This manual (file name: BA_SCALANCE‑W788‑xPRO‑RR‑W74x‑1PRO‑RR_0.pdf) is available on the CD that accompanies the IWLAN/PB Link PN IO or on the Internet at:

http://support.automation.siemens.com/WW/view/en/28529396

3.5   C-PLUG (Configuration Plug)

C-PLUG removable memory medium as an alternative to flash memory

The IWLAN/PB Link PN IO has an internal flash memory for storing the project engineering data. As an option, the device can be operated with a C-PLUG (configuration plug) removable memory medium.

The IWLAN/PB Link PN IO can be operated with or without a C-PLUG. The existing flash memory is then only used when no C-PLUG is inserted.

If a C-PLUG is inserted, the project engineering data is always stored on it. This simplifies replacement of modules. By simply exchanging the C-PLUG, all the data can be transferred to the replacement module.

Response to an unknown or invalid C-PLUG

If a C-PLUG is inserted that does not have the correct format or valid data for the IWLAN/PB Link PN IO, the IWLAN/PB Link PN IO will not start up. Device status: System fault LED lit.

To ensure that you can access the IWLAN/PB Link PN IO via the WLAN interface in this status, the WLAN parameters stored in the internal flash memory are used.

If you know this parameter, please format the C-PLUG with NCM diagnostics or replace the C-PLUG with a C-PLUG with valid data.

If, however, you do not know this parameter and cannot establish a connection in the WLAN, use the RESET button to run a "reset to factory settings" with the C-PLUG inserted (see Section 5.2); you then operate with the default WLAN parameters.

Notice

The C-PLUG may only be inserted or removed when the power is turned off!

Figure 3-2   Fitting a C-PLUG in the IWLAN/PB Link PN IO and Removing a C-PLUG from the
                 IWLAN/PB Link PN IO using a Screwdriver

Table 3-1   Working with and without a C-PLUG

Progress / status	Behavior during data transmission	Result after startup
Settings as shipped (after parameter assignment with PRESET PLUG or over Telnet/CLI) - Operation without C-PLUG		
• C-PLUG not inserted.	The configuration data is transferred from the STEP 7 project. The following differentiation is made here: • Use as Gateway only: Project engineering data transferred by the download function of STEP 7. • Use as PROFINET IO device: Project engineering data transferred from PROFINET IO controller.	The IWLAN/PB Link PN IO uses the configuration data transferred to the internal flash memory. [1]
C-PLUG inserted in the module with settings as shipped (after parameter assignment with the PRESET PLUG or over Telnet/CLI)		
• Empty C-PLUG is inserted.	The configuration data is transferred from the STEP 7 project. The following differentiation is made here: • Use as PROFINET IO device: Project engineering data transferred from PROFINET IO controller. • Use as Gateway only: Project engineering data transferred by the download function of STEP 7.	The IWLAN/PB Link PN IO uses the configuration data transferred automatically from the internal flash memory to the C-PLUG. [1]

Table 3-1   Working with and without a C-PLUG, continued

Progress / status	Behavior during data transmission	Result after startup
• C‑PLUG with configuration data is inserted. Requirement: Project engineering data must be valid for the IWLAN/PB Link PN IO [2]	Result after startup: The IWLAN/PB Link PN IO starts up with the project engineering data stored on the C‑PLUG.	The IWLAN/PB Link PN IO uses the configuration data on the C‑PLUG. [1]
In its configured state, the module is already equipped with the C‑PLUG.		
• Empty C‑PLUG is inserted.	When the IWLAN/PB Link PN IO is started, the configuration data is loaded from the internal flash memory to the C‑PLUG. The configuration data is deleted from the internal flash memory.	The IWLAN/PB Link PN IO uses the configuration data transferred from the flash memory to the C‑PLUG. [1]
• C‑PLUG with the configuration data is inserted Requirement: Project engineering data must be valid for the IWLAN/PB Link PN IO [2]	Provided that the C‑PLUG for the IWLAN/PB Link PN IO contains valid configuration data, this data is used. The data in the internal flash memory is ignored. During the next startup, the internal flash memory is reset. The internal WLAN parameters, however, are not deleted.	Result: The IWLAN/PB Link PN IO starts up with the project engineering data stored on the C‑PLUG. [1]

1) Note on use as a PROFINET IO device: Only the device name and the WLAN parameters are stored retentively on the C‑PLUG; project engineering data is transferred by the PROFINET IO controller during each startup and stored in volatile memory.

2) Note: If the C‑PLUG has no valid project engineering data for the IWLAN/PB Link PN IO, the device will not start up! In this case, use the NCM diagnostics to clarify the situation and, if necessary, format the C‑PLUG.

4   Configuration with STEP 7

To connect (initial addressing) and configure the IWLAN/PB Link PN IO, you need the STEP 7/ NCM S7 configuration software (as of version V5.3 SP2 Hotfix 1.

Notice

If the hardware catalog of HW Config in your STEP 7 installation does not contain the IWLAN/PB Link PN IO component, you have to also install the hardware update in STEP 7 / HW Config.
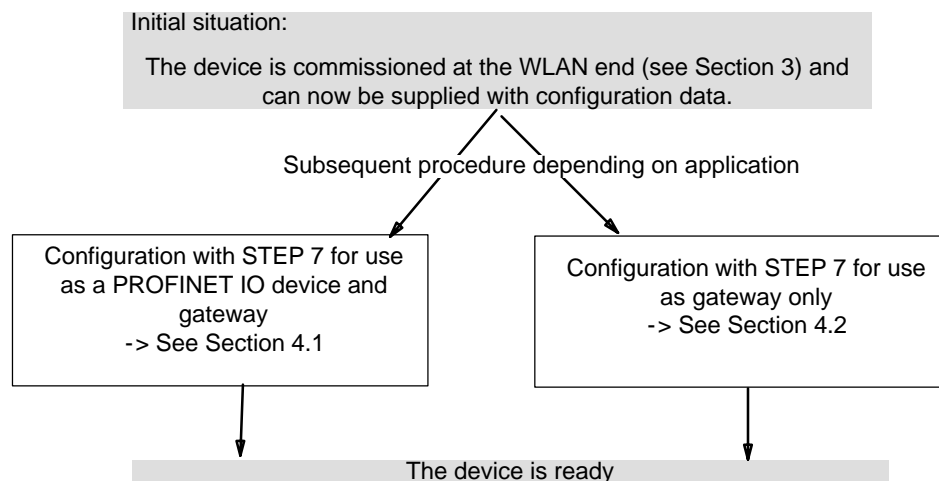
The hardware update is on the CD supplied with the product and can be found in the directory: software/HSP_1009

In STEP 7 / HW Config, choose:

Options ▸ Install Hardware Updates...

For information on how to continue, see the online help in STEP 7.

After installation and parameter assignment, the device can be configured and the configuration data downloaded in two different ways depending on the application:

Initial situation:

The device is commissioned at the WLAN end (see Section 3) and can now be supplied with configuration data.

Subsequent procedure depending on application

Configuration with STEP 7 for use as a PROFINET IO device and gateway
-> See Section 4.1

Configuration with STEP 7 for use as gateway only
-> See Section 4.2

The device is ready

4.1   Use as a PROFINET IO Device and as a Gateway

For this application, configure the IWLAN/PB Link PN IO as a PROFINET IO device with STEP 7/HW Config and assign a DP master system to the IWLAN/PB Link PN IO.

Load the configuration data to the PROFINET IO controller, which then automatically loads it to the IWLAN/PB Link PN IO.

Notice

You must always restore the factory settings when you switch the configured IW-LAN/PB Link PN IO operating mode. The device can only be operated as a PRO-FINET IO device or as a gateway.
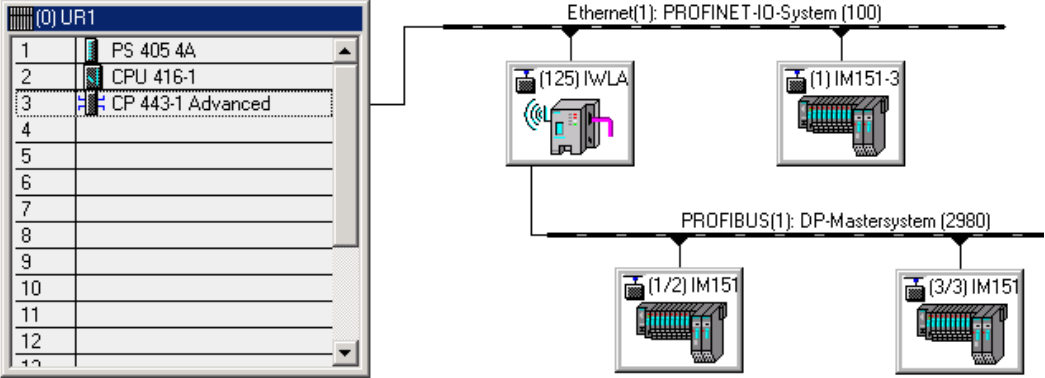
4.1.1   Configuring the Properties with STEP 7

To assign address information and further parameters to the IWLAN/PB Link PN IO, you have to generate a loadable database (configuration) in STEP 7.

Follow the steps below

Step	Configuring the IWLAN/PB Link PN IO as a PROFINET IO device with STEP 7/HW Config
1.	Use an existing STEP 7 project in which you have already created a PROFINET IO controller (e.g. an S7-400 station with a CP 443-1 Advanced).
2.	Open HW Config by double-clicking the station you created .
3.	Take the device type gateway IWLAN/PB Link PN IO from the hardware catalog under PROFINET IO and add this as an IO device on the PN IO system of the IO controller.
	An IP address for the PROFINET IO system interface is determined automatically here. STEP 7 also assigns a device number to the IWLAN/PB Link PN IO. It chooses the highest free device number in the current PROFINET IO system.

Step	Connecting the PROFIBUS subnet in the STEP 7 project
4.	Once you have transferred the IWLAN/PB Link PN IO from the hardware catalog, you are prompted to network the IWLAN/PB Link PN IO to the PROFIBUS interface.
	If you have not yet created the required subnets, you can do this now by selecting the relevant entry. This creates a DP master system.
Results:	
In HWConfig, the IWLAN/PB Link PN IO is created as a PROFINET IO device with a DP master system.	

Step	Connecting the PROFIBUS subnet in the STEP 7 project
5.	Set any other required properties of the IWLAN/PB Link PN IO (see also Section 4.3).
6.	Configure the DP master system and its DP slaves.

Note

For the IWLAN/PB Link PN IO, the DP master system is assigned to the PROFIBUS submodule. If you want to create a new DP master system, therefore, you first have to choose the PROFIBUS submodule.

4.1.2   Update Time for the PROFINET IO System

You can display and set the parameters described below in the properties dialog box for the PROFINET IO system in HW Config.

Setting the update time

Update times can only be set in certain intervals. STEP 7 determines the relevant values on the basis of the properties of the IO devices involved.

If you change the basic hardware configuration, for example, add new IO devices, the update time can change. The next time you open the dialog, a message informs you that the update time has changed.

The default value for the update time is calculated automatically depending on the maximum number of links on an IWLAN segment (or AP).

Notice

Note that the update time you choose for the SCALANCE W788-RR must be identical to the setting described here for the IWLAN/PB Link PN IO in the STEP 7 configuration.

Set the update time over the CLI in the following menu: "ifeature ▶ ipcf ▶ PN IO Update Time

---

Selection of channels to be scanned

The minimum selectable update time is decided by the number of WLAN clients on an access point in the configuration in STEP 7.

To keep the proportion of cycle time required for scanning channels to a minimum when roaming, we recommend that you use the "Background scan channels" setting. This restricts the number of channels on which the IWLAN/PB Link PN IO scans for a channel.

To use this, select the following settings in the "Interfaces ▶ wlan1 ▶ Advanced" menu:

*   Background scan channel select -> activates the background scan
*   Background scan channels -> selection of channels to be scanned

    This optimizes the roaming characteristics in terms of time.

Optimizing the update time

You can optimize the update time by specifying the maximum number of links in your system on the "IWLAN Parameters" tab.

Notice

If the update time you choose is too short or if the IWLAN segment has more links than you specified on the "IWLAN Parameters" tab, this may cause the connection to be interrupted. For this reason, you are advised to retain the default settings.

When optimizing the update time, you must take into account the following points to ensure stable communication:

*   Case a: your system is operated in a single wireless segment; in other words, the clients (IWLAN/PB links, SCALANCE W74x) do not need to support roaming to another wireless segment.

    In this case, update times of >=8 ms are supported.

    Optimum wireless conditions without roaming: update times of 4 ms are only possible under optimum wireless conditions and when the cell has just one client.

*   Case b: your system is operated with two wireless segments on two different channels.

    In this case, update times of >=16 ms are also supported.

*   Case c: your system is operated with more than one wireless segment and more than two channels. The clients also switch between the segments (roam).

    In this case, the PN IO update time should be higher than 16 ms.

Notice

You are strongly advised to check the local radio conditions before commissioning.

Note

You will find a detailed description of the commands of the Command Line Interface (CLI) in the Operating Instructions SCALANCE W788-xPRO/RR / SCALANCE W74x-1PRO/RR. This manual (file name: BA_SCALANCE-W788-xPRO-RR-W74x-1PRO-RR_0.pdf) is available on the CD that accompanies the IWLAN/PB Link PN IO or on the Internet at:

http://support.automation.siemens.com/WW/view/en/28529396

4.1.3 Assigning Device Names and Downloading the Configuration

The IWLAN/PB Link PN IO is supplied with a fixed MAC address. Without further configuration, the device can only be accessed over the WLAN port using this MAC address.

An IP address is automatically assigned during configuration. Later when the PROFINET IO controller is started up, this IP address is transferred to the IWLAN/PB Link PN IO (IO device).

To ensure that the IO controller can identify the IO device during this procedure, you first have to assign a device name to the IWLAN/PB Link PN IO as you do to every other IO device. You only have to assign the name once.

Follow the steps below

Step	Procedure
1.	Assign a device name to the IWLAN/PB Link PN IO (you only have to do this once).
	You can do this in the SIMATIC Manager or in HW Config with the menu command **PLC ▸ Ethernet ▸ Assign device name...**
	(More detailed information on this procedure is available in the STEP 7 online help.)
2.	Load the configuration for the associated PROFINET IO controller.
	The IO controller receives the configuration data from the IWLAN/PB Link PN IO. When the IO controller is started up, the IWLAN/PB Link PN IO and all the other PROFINET IO devices are configured automatically.

Note

The configuration data loaded by the PROFINET IO controller is not stored retentively by the IWLAN/PB Link PN IO. When you switch the device off and then on again, all the configuration data except for the device name is deleted. During startup, the configuration data is reloaded by the PROFINET IO controller.

4.2   Use As a Gateway Only

For this application, configure the IWLAN/PB Link PN IO as an S7-300 station with STEP 7/HW Config and load the configuration data to the IWLAN/PB Link PN IO.

Notice

You must always restore the factory settings via NCM diagnosis (see Section 5.2.2) when you switch the configured IWLAN/PB Link PN IO operating mode. The device can only be operated as a PROFINET IO device or as a gateway.

4.2.1   Configuring the Properties with STEP 7

Follow the steps below

Step	Configuring the IWLAN/PB Link PN IO as an S7-300 station with STEP 7/HW Config
1.	Use an existing STEP 7 project or create a new one.
2.	Create a station of type SIMATIC 300.
3.	Open HWConfig by double-clicking the station you created.
4.	From the hardware catalog under SIMATIC 300 / gateway, choose the device type IWLAN/PB Link PN IO.
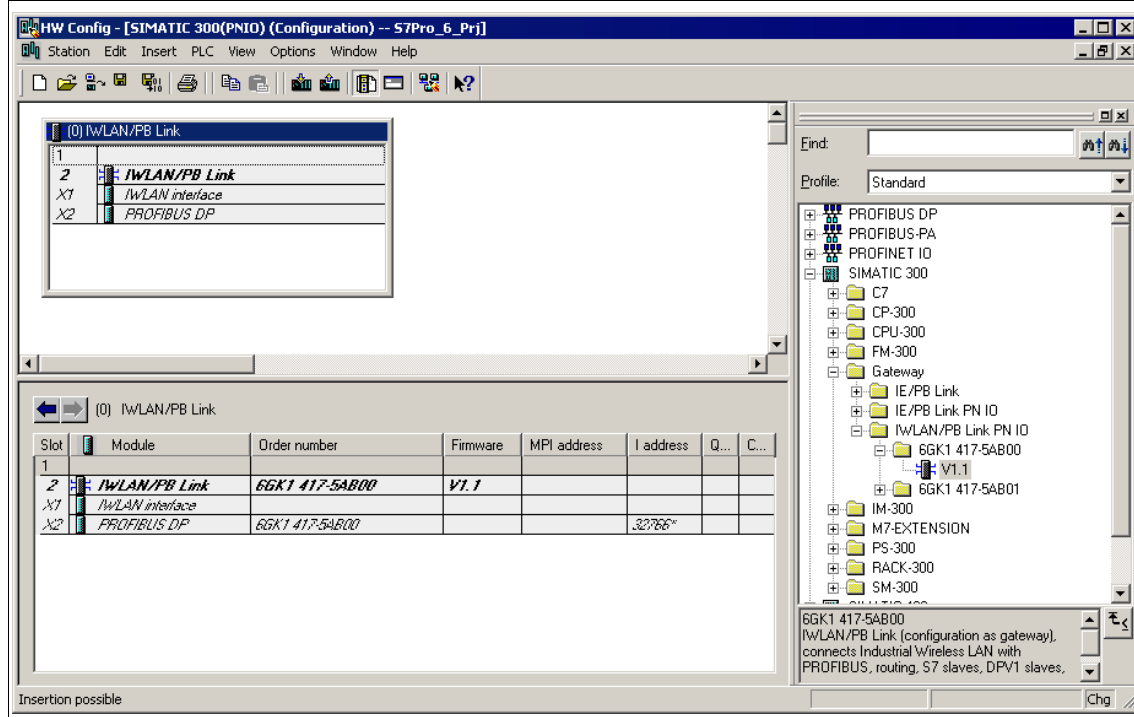
Step	Connect the IWLAN/PB Link PN IO to the Ethernet and PROFIBUS subnet in the STEP 7 project
5.	Once you have copied the IWLAN/PB Link PN IO from the hardware catalog, you are prompted to network the IWLAN/PB Link PN IO on the Ethernet interface and then on the PROFIBUS interface. If you have not yet created the required subnets, you can do this now by selecting the relevant entry. Result: You have created the IWLAN/PB Link PN IO component with a basic module and the Ethernet and PROFIBUS submodules in the S7-300 station in HW Config.
6.	Set any other properties of the IWLAN/PB Link PN IO. For more information about this, see Sections 4.3.1 to 4.3.3.

4.2.2   Assigning the IP Address and Loading the Configuration

The IWLAN/PB Link PN IO is supplied with a fixed MAC address. Without further configuration, the device can only be accessed via the WLAN connection using this MAC address.

Step	Commissioning the IWLAN/PB Link PN IO
7.	Assign an IP address to the IWLAN/PB Link PN IO provided you have not already done this in the SIMATIC Manager independently of the configuration steps described here. To do so, choose the following menu command in HW Config **PLC ▶ Ethernet ▶ Assign Ethernet Address...**
8.	Load the database (configuration) from STEP 7 to the IWLAN/PB Link PN IO. The initial load process must be carried out from the Industrial Wireless LAN via the TCP/IP interface. Subsequent load processes can be carried out from PROFIBUS or the Industrial Wireless LAN via the TCP/IP interface depending on the PG connection.

Notice

Note that the IWLAN/PB Link PN IO is a special configuration component that already contains all the required station components. For this reason, you cannot place any other component (e.g. rack or modules) next to the IWLAN/PB Link PN IO.

4.3   Parameters in the Properties Dialog Box for IWLAN/PB Link PN IO

You can set the other IWLAN/PB Link PN IO properties in HWConfig or via the component view in NetPro (with gateway operation only).

4.3.1   Setting the Properties in the Basic Module

Opening the properties dialog

Selection option (example used here: in NetPro for operation as a gateway):

After selecting the basic module and opening the object properties, you can make the following settings:
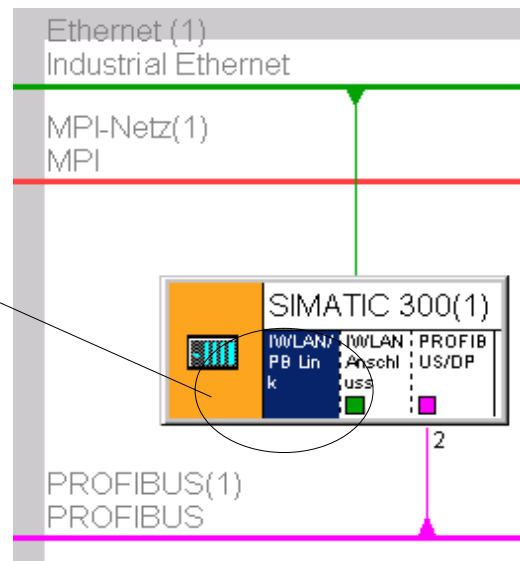
- "General" tab

  Here, you can enter general information such as a technological name to be used for component management in the STEP 7 project.

- "Options" tab

  - Time-of-day synchronization

    Here, you can set whether the IWLAN/PB Link PN IO is to forward time messages from a real-time transmitter. Selectable directions: from PROFIBUS to Ethernet or from Ethernet to PROFIBUS.

  - Assigning parameters to field devices (data record routing)

    Here, you can decide whether or not the device is to support data record routing for assigning parameters to field devices. As default, the option is activated.

- "Device number" tab (only with operation as PROFINET IO device)

  The DP slaves are addressed as an IO device from the PROFINET IO controller using the PROFINET IO device number. "Device number" tab You can display the device numbers of the DP slaves, which are assigned automatically. You can change the device numbers.

- "Diagnostics" tab

  Here, you can call up the NCM diagnosis directly when the
  IWLAN/PB Link PN IO is online.

Note

You will find more detailed information on this procedure in the STEP 7 online
help.

4.3.2   Setting Properties in the IWLAN Interface Submodule

In NetPro, the S7-300 station you have
configured is displayed as shown here:
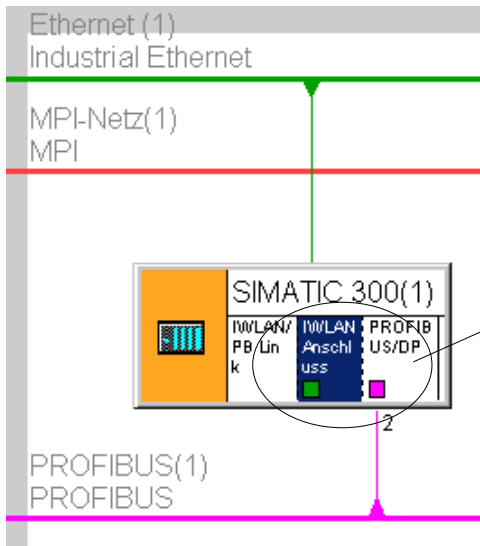
Selection option (example used here:
in NetPro for operation as a
gateway):

You can make the settings described
here by selecting the IWLAN
interface submodule and opening the
object properties:

In HW Config, the S7-300 station you
have configured is displayed as shown
below:
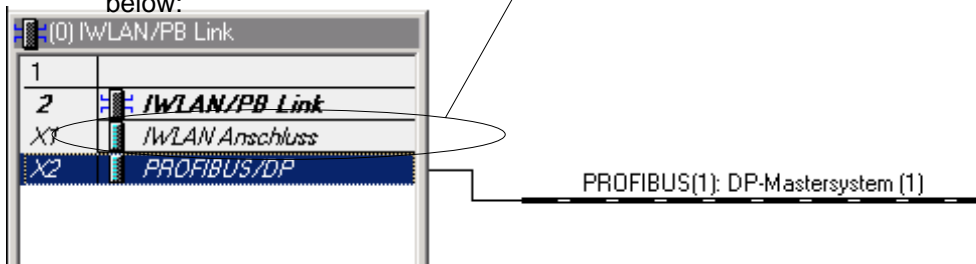
These properties can be configured:

- "General" tab

    Here, you can enter general information to be used for component management in the STEP 7 project. You can also set parameters for the interface to Ind. Ethernet.

Note

You will find more detailed information on this procedure in the STEP 7 online help.

4.3.3   Setting the Properties in the PROFIBUS Submodule

Selection option (example used here: in NetPro for operation as a gateway):

After selecting the PROFIBUS/DP submodule and opening the object properties, you can make the following settings:
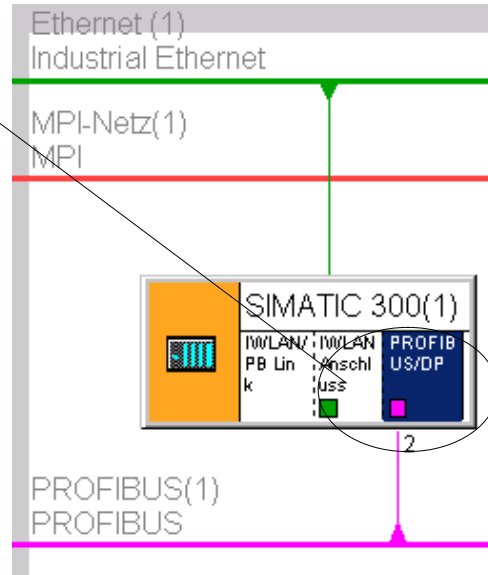
- •   "General" tab

    Here, you can set the parameters for the interface to PROFIBUS; in other words, assign the network and the PROFIBUS address.

    You can also enter general information to be used for component management in the STEP 7 project.

- •   "Addresses" tab

    The address parameter displayed here for diagnostic purposes is not relevant for the IWLAN/PB Link PN IO.

- •   "Operating Mode" tab

    Here, you can (de)select the PROFIBUS DP operating mode.

    In the "No DP" mode, the IWLAN/PB Link PN IO behaves like a PG/PC. By configuring the IWLAN/PB-Link in the "DP Master" mode with an attached DP master system, you allow direct data access between connected DP slaves.

5   Restoring the Standard Settings

5.1   WLAN Settings as Shipped (Default Status)

When shipped, the IWLAN/PB Link PN IO is configured so that it uses an AP (access point) to connect to the SSID "WLAN_CONFIG_AP" after startup.

Note: The configuration AP must be operated as follows in 802.11g mode:

- Country code: Germany
- As Open System (Security)
- Without iPCF [1]

Note

You will find a detailed description of the commands of the Command Line Interface (CLI) in the Operating Instructions SCALANCE W788-xPRO/RR / SCALANCE W74x-1PRO/RR. This manual (file name: BA_SCALANCE-W788-xPRO-RR-W74x-1PRO-RR_0.pdf) is available on the CD that accompanies the IWLAN/PB Link PN IO or on the Internet at:

http://support.automation.siemens.com/WW/view/en/28529396

Parameter assignment without the PRESET PLUG using the Primary Setup Tool and CLI

The behavior in the default status as shipped allows an IP address to be assigned to the device by means of STEP 7 or the PST (Primary Setup Tool) after which it can be assigned parameters by means of remote configuration with Telnet and the Command Line Interface (CLI).

Note

The PST (Primary Setup Tool) is on the CD supplied with the product and can be found in the directory: software/PST

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1) iPCF - **i**ndustrial **P**oint **C**oordination **F**unction ensures that the entire data traffic of a wireless cell is controlled by the access point. This allows collisions to be avoided even with large numbers of nodes and optimizes the throughput. iPCF also allows fast roaming.

5.2 Memory Reset or Resetting to Factory Settings

A three‑step function is available for carrying out a memory reset on the IWLAN/PB Link PN IO:

• Carry out the memory reset

• Restore the factory settings via NCM diagnosis (WLAN parameters are retained)

• Restore the factory settings via the RESET button (WLAN parameters are reset)

Notice

You must always reset to the factory settings using NCM diagnostics (see Section 5.2.2) when you change the configured IWLAN/PB Link PN IO operating mode. The device can be operated as a PROFINET IO device or as a gateway only.

5.2.1 Memory Reset

Result / effect:

After a memory reset, the IWLAN/PB Link PN IO has the following status:

- All the configuration data has been deleted

- All connections to the device have been terminated

- The retentive parameters (for example, IP address and device name) are retained.

How to reset memory

The functions for carrying out a memory reset can be triggered from STEP 7. You have two options:

• In STEP 7/HW Config with **PLC ▸ Clear/Reset**

  or

• In STEP 7 / NCM Diagnostics with **Operating Mode ▸ Clear/Reset Module**

5.2.2   Resetting to the Factory Settings using NCM Diagnostics - (WLAN parameters are retained)

Result / effect:

Once the factory settings have been restored, the IWLAN/PB Link PN IO still retains the default MAC address (as shipped). The device name and the IP address are deleted.

The entire content of the optional C‑PLUG is deleted. When the module is next started up, the C‑PLUG is initialized as a data record of type IWLAN/PB Link PN IO.

The set IWLAN parameters are retained, which means that the device remains connected to the AP.

How to carry out the function

For the diagnostic object IWLAN/PB Link PN IO, select the following menu command in NCM diagnostics:

Operating Mode ▶ Reset to factory settings

5.2.3   Resetting to Factory Settings with the RESET Button - WLAN parameters are reset)

Result / effect:

Once the factory settings have been restored, the IWLAN/PB Link PN IO still retains the default MAC address (as shipped). The device name and the IP address are deleted.

The entire content of the optional C‑PLUG is deleted. When the module is next started up, the C‑PLUG is initialized as a data record of type IWLAN/PB Link PN IO.

The set IWLAN parameters are also deleted and reset to the default values (see Section 5.1)

How to carry out the function

Via the Reset button:

Step	Restoring the factory settings via the Reset button
1.	Switch off the power supply for the IWLAN/PB Link PN IO.
2.	Press the Reset button and keep it depressed. While doing so, switch the power supply back on (SF LED flashes).
3.	Keeping the Reset button depressed, wait until the red SF LED stops flashing (after about 15 seconds) and is continuously lit.
4.	Release the Reset button. The device now restarts with the default parameters. The restart is complete as soon as the ON LED goes out and then lights up again.

6   LEDs

The front panel has 5 LEDs that indicate the operating status.

LEDs for indicating the operating status

The LEDs on the front panel indicate the operating status as follows:

SF	System fault
BF PN	PROFINET bus fault
BF DP	PROFIBUS DP bus fault
RX/TX (green/yellow)	Transmit/receive activity on Industrial Wireless LAN
ON	The system is switched on

Table 6-1   LED Statuses

SF (red)	BF PN (red)	BF DP (red)	RX/TX (green/yellow)	ON (green)	Operating status
●	●	●	◐	●	Switch on (lamp test)
●	○	○	☀	◐	Configuration distribution phase (RX/TX yellow ! flashing)
○	○	○	◐	●	Running (RUN), no fault
●	○	○	◐	●	Running (RUN), DP slave or C-PLUG fault.
●	○	☀	◐	●	Running (RUN), PROFIBUS fault that does not affect PROFINET IO.
●	☀	☀	◐	●	Running (RUN), with fault: • PROFIBUS fault that also affects PROFINET IO (e.g. IO device) or • PROFINET IO fault that also affects PROFIBUS (e.g. proxy has not been commissioned)
●	☀	○	◐	●	Running (RUN), PROFINET IO fault; no logical or physical connection to PROFINET IO controller.
◐	◐	◐	☀	◐	(RX/TX green ! flashing) The WLAN connection to the access point is interrupted. Possible reason: incorrect WLAN parameter assignment.

Table 6-1   LED Statuses, continued

SF (red)	BF PN (red)	BF DP (red)	RX/TX (green/yellow)	ON (green)	Operating status
☀	◯	◯	◯	◯	Ready to start loading firmware. The device was stopped as a result of an instruction in the firmware loader (Reset button) or it has bad firmware.
◑	◑	◑	●	◑	(RX/TX green ! steady-state signal) Connection established to access point. No data is transmitted.
◑	◑	◑	●	◑	(RX/TX orange ! steady-state signal) Connection established to access point. Data is transmitted.
☀	☀	☀	☀	☀	PRESET PLUG recognized. Ready for preset function.
●	●	●	●	●	Preset function successfully completed. Device can be switched off and the PRESET PLUG removed.
◑	◑	◑	◑	☀	Note the difference between: • ON LED flashing quickly (approx. 5 Hz) Bell function is active. • ON LED flashing slowly (approx. 1 Hz) Device is in STOP status

Legend:　●　on　◯　off　☀　flashing　◑　unspecified (LED may light up)

7   Performance Data

7.1   Characteristic Data for Wireless Links

The following constraints apply to operation in iPCF mode:

Table 7-1

Wireless Standard	Recommended Maximum Data ate
802.11a	12 Mbps
802.11b	11 Mbps
802.11g	12 Mbps

7.2   S7 Communication Characteristics

Table 7-2

Characteristics	Explanation / Values
All S7 connections You are advised not to set up any more S7 connections than specified here.	8

Configured and non‑configured S7 connections are used for S7 communication.

7.3   Features of Data Record Routing

Assigning parameters to field devices (data record routing)

You can use the IWLAN/PB Link PN IO as a router for data records that are addressed to field devices (DP slaves). In this way, devices that are not directly connected to PROFIBUS and, therefore, cannot access the field devices (DP slaves) directly, can transmit data records to the field devices via the IWLAN/PB Link PN IO.

The SIMATIC PDM (Process Device Manager) is an example of a tool that creates data records for assigning parameters to field devices.

The function is activated by default.

Table 7-3

Characteristics	Explanation / Values
Maximum number of connections to DP slaves	8
Maximum data record size for the parameters that can be transferred via a connection per DP slave	240 bytes

7.4 Total Number of Connections

A maximum of 16 connections (S7 connections and connections to the DP slaves) can be used.

Notice

Note that one TCP/IP connection on Industrial Ethernet is occupied for each S7 connection used.

7.5 Characteristic Data for PROFINET IO

Table 7-4

Characteristics	Explanation / Values
Maximum number of DP slaves on the IWLAN/PB Link PN IO (PROFINET IO devices for PROFINET IO)	8
Maximum number of DP inputs	256 bytes
Maximum number of DP outputs	256 bytes

8   Compatibility with Predecessor Products

8.1   Use as a replacement:

Changing to hardware version AS 03

As of hardware version AS 03, the IWLAN/PB Link PN IO uses a new IWLAN wireless module with modified wireless properties compared with the IWLAN wireless modules of hardware versions AS 01 and AS 02.

When converting to devices as of hardware version AS 03, the previous configuration on C-PLUG, Preset Plug and in the configuration file "config.cfg" can be used in most cases.

When adopting a configuration, created with a hardware version lower than AS 03, remember the following:

- The displayed parameter for the transmit power is adapted automatically without resulting in changes to the transmit power.
  Example:
  At the setting "Half, 1/2 (-3dBm)", a device with hardware version AS 03 has a maximum transmit power of 17 dBm.
  A device with a hardware version less than AS 03 also has a maximum transmit power of 17 dBm if the "Transmit Power" parameter is set to "Full (-0dB)".
  The parameters for other transmit power settings are also adapted automatically.

- The antenna type is automatically set to the value "User Defined".
  The value set for the antenna gain parameter is adopted.
  Example:
  The value "ANT795-6MR, 5m cable" is automatically converted to
  "User defined" with the appropriate antenna gain.

Note

The adaptation/transfer of the parameters is handled by the new device automatically when it is restarted after adopting the old configuration.

There are, however, configurations in which the adaptation of the parameters cannot be handled by the firmware. In these cases, you will need to adapt the configuration manually.

- When selecting channels in frequency bands with different limit values for transmit power, it is possible that the list of selectable channels is restricted due to the different wireless properties.
  This may mean that devices can no longer be reached via the wireless interface!
  When replacing devices with the previous versions with devices with hardware version AS 03, we therefore strongly recommend that these are checked in a test environment to make sure that they adopt the channel selection unchanged.
  The channel selection is, for example dependent on the set transmit power and can be influenced by modifications to the relevant parameters.
  Once a device with hardware version AS 03 has been assigned parameters with a configuration file from an older device, all the parameters relating to national approvals are checked.

Note

During a transitional period, it is possible that some national approvals are not yet available for the devices with hardware version AS 03 because the certification process takes longer in some countries.
You should therefore make sure that the devices are approved for your application by checking the following Internet page:
http://www.siemens.com/simatic-net/ik-info

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9   Further notes regarding operation

9.1   Changing interface parameters during download

If you change the interface parameters that are already set (e.g. the transmission speed), this can cause the download process to be aborted.

In this case, adjust the PG/PC interface and network configuration in line with the new interface parameters and carry out the download again.

9.2   Time forwarding

If the time forwarding function in the IWLAN/PB Link PN IO is deactivated, the device uses the internal time, even if the Ethernet has a time master.

9.3   SNMP agent

SNMP (**S**imple **N**etwork **M**anagement **P**rotocol)

The IWLAN/PB Link PN IO supports data querying via SNMP in version 1.

SNMP is a simple protocol language for managing networks. For data transmission, SNMP is based on the connectionless protocol UDP.

Information about the properties of SNMP-capable devices is available in "MIB" files (MIB = Managed Information Base). For more detailed information about using MIB files, see the documentation provided with the SNMP clients used (example of an SNMP client: SNMP OPC server of SIMATIC NET).

Supported MIBs

The IWLAN/PB Link PN IO supports all MIB objects in the standard MIB (in accordance with MIB II (RFC 1213)).

Exceptions / restrictions:

- Write access is enabled for the following MIB objects only:

  sysContact, sysLocation, and sysName

  In all other cases, only read access is enabled (for security reasons).

Access rights via community name

The IWLAN/PB Link PN IO uses the following community names to assign rights:

- Read access: "public"

- Read/write access: "private"

(Note use of lower case!)

Evaluating traps

To evaluate the IWLAN/PB Link PN IO traps, you need the appropriate private MIB file for this device. The private MIB files contain the device and manufacturer‑specific MIB objects.

The private MIB file for the IWLAN/PB Link PN IO is in the SCALANCE W7xx type devices. You can download them from there and import them to your trap receiver.

To do so, enter the following URL in your Web browser:

http://<IP-Adresse_vom_SCALANCE_W7xx>/sniWlanPBLink.mib

10   How to Load New Firmware

Requirements

- When downloading over PROFIBUS

    - There must be a PROFIBUS CP module in the PG/PC.

- When downloading over Industrial Ethernet

    - To download firmware, you require an Industrial Ethernet CP module in the PG/PC (for example, CP 1613) or a normal Ethernet module with the "Softnet" software package.

    - The S7-ONLINE interface must be set to the "ISO - Industrial Ethernet" protocol. It is not possible to download using TCP/IP (and therefore not to other networks).

How to Download New Firmware

You download new firmware to a SIMATIC NET CP using the firmware loader shipped with STEP 7 / NCM S7 for Industrial Ethernet and PROFIBUS.

- Start the firmware loader and follow the instructions step-by-step.

What to do if a Download is Interrupted

Disturbances or collisions on the network can lead to packets being lost. In such cases, this can lead to an interruption of the firmware download. The firmware loader then signals a timeout or negative response from the module being loaded.

If you were unable to download the new firmware successfully, (download over IWLAN or PROFIBUS), you should run the download again directly over PROFIBUS.

If the device is not ready to accept the download, follow the steps below:

1. Turn off the power supply to the IWLAN/PB-Link

2. Press the Reset button and keep it depressed. Turn the power supply on again and wait until the SF-LED flashes.

3. Release the Reset button again; the device is now ready for the firmware update over PROFIBUS using the firmware loader.

11   Technical data

11.1   Technical Specifications of the Module

Data transmission / supported transmission rate	
• Transmission rate wireless	1 to 54 Mbps
• Supported standards wireless	802.11a, 802.11b, 802.11g
• PROFIBUS	9.6 Kbps, 19.2 Kbps, 45.45 Kbps, 93.75 Kbps 187.5 Kbps, 500 Kbps, 1.5 Mbps, 3 Mbps 6 Mbps, 12 Mbps
Max. segment length for PROFIBUS Note: If the specified length is exceeded, a repeater is required.	20 m
Maximum current consumption on the PROFIBUS interface with network components connected (for example, optical network components)	100 mA at 5V
Interfaces Industrial wireless LAN Connection to PROFIBUS	R‑SMA antenna socket 9-pin D‑sub female connector
Power supply	2 infeeds for +20.4 V to 28.8 V DC The power supply is electrically isolated. A high‑resistance connection exists (>700kΩ) with the contact spring for mounting the housing on the top‑hat rail).
Current consumption • from external 24 V DC	Approx. 0.3 A (typical at 24 V)
Power loss	6.5 W
Permitted ambient conditions • Operating temperature • Transportation/storage temperature • Relative humidity max. • Altitude	0 °C to +60 °C -40 °C to +70 °C 95% at +25 °C up to 2000 m above sea level
Design Module format: • Dimensions (W x H x D) in mm • Weight approx.	Compact module 90 x 132 x 75 300 g

For the IWLAN/PB Link PN IO, all the specifications for the following areas listed in the "General Technical Data" section in the /1/S7-300 Module Data: Reference Manual:

- Electromagnetic compatibility
- Transportation and storage conditions
- Mechanical and climatic ambient conditions
- Insulation tests, class of protection and degree of protection

Exception: the module dimensions and installation procedure are different to those for SIMATIC S7-300.

11.1.1   Standards and Approvals

Notice

The Information in the section Standards and Approvals in the following documents applies:

- In the **Operating Instructions (compact)** accompanying the device described here;
- In the General Part A of this manual.
  You can also download the current General Part A from Internet:

  http://support.automation.siemens.com/WW/view/en/8777865

12   FCC Approval

This device - Order‑Nr.: 6GK1417‑5AB01 (US‑Variante) - complies with Part 15 of the FCC Rules and with RSS‑210 of Industry Canada.

Operation is subject to the following two conditions:

1. this device my not cause harmful interference, and

2. this device must accept any interference received, including interference that may cause undesired operation.

Notice

Changes or modifications made to this equipment not expressly approved by SIEMENS may void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

*   Reorient or relocate the receiving antenna.

*   Increase the separation between the equipment and receiver.

*   Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Notice

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20cm between the radiator and your body.

This transmitter must not be co‑located or operating in conjunction with any other antenna or transmitter.